CLAIMS

- 1. An optical waveguide comprising:
 - a) a support layer;
- b) a core layer including a cross-linked polymeric material obtained by UV irradiation of a polyimide having repeating units of formula (I)

wherein R_1 , R_2 , and R_3 independently represent hydrogen or a (C_1-C_6) -alkyl group,

10 R₄, R₅, R₆, R₇, R₈ and R₉ independently represent hydrogen, a (C₁-C₆)-alkyl group, a (C₁-C₆)alkenyl or an aryl group;

X is selected from a covalent bond; a $(CH_2)_y$ group, wherein y is an integer from 1 to 10; O; S; NR, wherein R is (C_1-C_4) alkyl,

x is 0-5,

15 m is 1-10

n is an integer having an average value of from 5 to 50,000, and the deuterated derivatives thereof.

- 2. Optical waveguide according to claim 1 wherein R₁, R₂, R₃ and R₄ independently represent hydrogen or a (C₁-C₃)alkyl group.
- Optical waveguide according to claim 1 wherein said support has a refractive index lower than that of said cross-linked polymeric material.
 - 4. Optical waveguide according to claim 1 wherein said support layer is a glass layer.
- 5. Optical waveguide according to claim 1 comprising a cladding layer disposed over said core layer on the opposite side of that of the support layer.

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- 6. Method for producing an optical waveguide comprising the steps of
 - a) spin-coating a polyimide of general formula (I)

wherein R_1 , R_2 , and R_3 independently represent hydrogen or a (C_1 - C_6)alkyl group,

 R_4 , R_5 , R_6 , R_7 , R_8 and R_9 independently represent hydrogen, a (C_1 - C_6)alkyl group, a (C_1 - C_6)alkenyl or an aryl group;

X is selected from a covalent bond; a $\{CH_2\}_y$ group, wherein y is an integer from 1 to 10; O; S; NR, wherein R is (C_1-C_4) alkyl,

x is 0-5,

m is 1-10

n is an integer having an average value of from 5 to 50,000, and the deuterated derivatives thereof,

on a substrate layer to obtain a film of the polyimide of formula (I);

- b) irradiating the film with UV radiation according to a selected pattern.
- 7. Method according to claim 6 comprising the step of spin-coating a cladding layer over the core layer.